

**WHAT IS CLAIMED IS:**

1. Manganese dioxide for lithium primary batteries which is obtained by soda neutralization and heat treatment of electrolytic manganese dioxide and has a sodium content of 0.05 to 0.2% by weight.
- 5 2. Manganese dioxide for lithium primary batteries according to claim 1, which has a phosphorus content of 0.05 to 2.0% by weight.
- 10 3. A process for producing manganese dioxide with a sodium content of 0.05 to 0.2% by weight for lithium primary batteries comprising the steps of neutralizing electrolytic manganese dioxide with an aqueous solution containing 2.0 to 5.0 g of sodium hydroxide per kg of manganese dioxide and then heating the neutralized manganese dioxide.
- 15 4. The process for producing manganese dioxide for lithium primary batteries according to claim 3, wherein said electrolytic manganese dioxide has a phosphorus content of 0.05 to 2.0% by weight.
5. A lithium primary battery comprising the manganese dioxide according to claim 1 or 2 as a cathode active material.